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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,005	11/27/2000	Emmanuel Hadji	33019	7399

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EXAMINER

AHMED, SHAMIM

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/673,005

Applicant(s)

HADJI ET AL.

Examiner

Shamim Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Response to Arguments

1. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Godbey et al (5,013,681).

Godbey et al disclose a process for producing a thin silicon layer, wherein a silicon block (20) is bonded with a support substrate (30) and silicon block is covered with silicon oxide layer (col.2, lines 3-29).

Godbey et al also disclose that an excess silicon region of the bonded silicon block is removed or cleaved by grinding and/or polishing followed by an etching operation (col.4, lines 32-36).

Godbey et al do not explicitly teach that the silicon block having a cleavage area parallel to its surface.

However, Godbey et al teach that the bulk silicon substrate is cleaved or majority — of the bulk silicon substrate is removed, which is parallel to it's surface leaving a desired thickness of the silicon block or substrate (col.4, lines 41-42).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to ensure the area of the silicon substrate in order to provide an indication where to remove or cleavage to be formed for providing a desired thickness as taught by Godbey et al.

Godbey et al also do not explicitly teach that a thinning process is performed after the removing or cleaving step.

However, Godbey et al teach that the majority of the silicon block is removed by mechanical or chemical polishing followed by an etching operation for providing a desired thickness of the silicon block (col.4, lines 32-47).

Therefore, it would have been obvious that the etching process after the polishing or grinding process would act as a thinning process because Godbey et al's etching operation will finish the removal process of the bulk silicon block for providing a desired thickness as taught by Godbey et al.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Godbey et al (5,013,681) as applied to claims 1-2 above, and further in view of Ohmura et al (4,848,272).

Godbey et al discussed above in the paragraph 3 but fail to disclose to increase the thickness by crystalline growth.

It would have been obvious to one skilled in the art to increase the thickness if the thickness is less than the predetermined thickness and furthermore, crystalline growth is conventional technique to form an epitaxial layer on a silicon substrate as supported by Ohmura et al.

Ohmura et al teach that crystalline growth is conventional to provide a high quality thin film having uniform thickness over a semiconductor substrate (col. 1, lines 10-14 and col.2, lines 3-7).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Godbey et al (5,013,681) as applied to claims 1-2 above, and further in view of Bruel (5,374,564).

Godbey et al discussed above in the paragraph 3 but fail to disclose that the cleavage area is formed using hydrogen implantation.

However, Bruel teaches that hydrogen implantation is advantageously used to a silicon substrate in order to promote the breaking process (col.5, lines 29-45).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Bruel's teaching into Godbey et al's process for promoting the breaking process of the silicon block or silicon substrate.

6. Claims 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramdani et al (5,835,521) in view of Godbey et al (5,013,681).

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Ramdani et al disclose a bragg mirror structure (10) including alternating layers of silicon oxide and a silicon material utilizing epitaxial growth technique and /or wafer bonding.

As to claim 6, Ramdani et al teach that silicon oxide layer is formed by standard epitaxial growth technique including CVD or PECVD technique (col.3, lines 18-25).

Ramdani et al also disclose that an optical component is formed by fabricating a vertical cavity surface emitting laser or active region on the bragg mirror (col.3, lines 9-55). Ramdani et al also teach that a second mirror (42) is disposed over the active region (col.6, lines 4-24).

Ramdani et al fail to teach the formation of silicon layer as the context of claim 1 namely bonding a silicon block with a support, cleaving the silicon block and thinning the surface layer to a desired thickness.

However, Godbey et al discussed in the paragraph 3 above.

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Godbey et al's teaching into Ramdani et al's process for providing a predetermined thickness of the silicon layer as taught by Godbey et al.

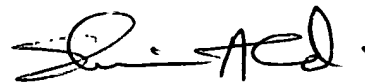
Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hambrun et al (5,838,065) disclose that it is conventional to slice or cleavage and polishing for thinning in order to get a desired thickness of a silicon substrate (col.3, lines 42-45).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Shamim Ahmed
Examiner
Art Unit 1765

SA
February 26, 2003